



Revisions to Section 39 Hot Mix Asphalt (HMA)

(formerly known as “Asphalt Concrete”)

Sacramento – October 11, 2006

San Bernardino – October 12, 2006

Handout Agenda & PowerPoint₁



Purpose of Today's Meeting

- Review the schedule.
- Present draft specifications, special provisions and other documents.
 - *Section 39*
 - *New SSPs*
 - *Plant Qualification Program*
 - *Mix Approval Forms*
 - *Lab Procedures (RAC related)*

October 11 & 12 – Present draft specifications.

November 16 & 17 – ACTG & RACTG meetings to discuss review comments.

November 30 – Caltrans issues 2nd draft.

December 22 – Final comments to State Materials and Pavement Engineer.

January 9 – Meeting with PPSC.

Mid-January – Final specifications.



Review Procedures

- **Jim St. Martin and Brandon Milar will coordinate the writing of Industry HMA comments and proposals. (Nov & Dec.)**
- **Doug Carlson or Jeff Reed will coordinate the writing of Industry RAC comments and proposals. (Nov & Dec).**
- **Terrie Bressette will receive comments and proposals (Nov. 16 & 17).**
- **Phil Stolarski will receive comments and proposals (Dec. 22).**



Review Procedures

- **October 12 through November 16/17 – Industry will:**
 - *Review the final draft specification.*
 - *Jim St. Martin and/or Brandon Milar will coordinate the writing of Industry's review comments.*
 - *Doug Carlson and/or Jeff Reed will coordinate the writing of Industry's review comments.*
- **Review comments for presentation to Terrie Bressette at meetings Nov. 16 & 17**



Review Procedures

- **November 16 – Caltrans Technical Team meeting with ACTG at Translab Auditorium.**
 - *Jim St. Martin and/or Brandon Milar will present Industry's written comments and proposals.*
 - *Discuss comments and proposals.*



Review Procedures

- **November 17 – Caltrans Technical Team meeting with RACTG at Translab Auditorium.**
 - *Doug Carlson and/or Jeff Reed will present Industry's written comments and proposals.*
 - *Discuss comments and proposals.*



Review Procedures

- November 16 to November 30 – Caltrans will:
 - *Review Industry comments and proposals.*
 - *Revise specifications as required.*
 - *Distribute the final draft specification with a summary of comments and responses.*



Review Procedures

- **December 1 to December 22 – Industry will:**
 - *Review the final draft specification.*
 - *Jim St. Martin and/or Brandon Milar will coordinate the writing of Industry's final review comments for Phil Stolarski, State Materials and Pavement Engineer.*
 - *Doug Carlson and/or Jeff Reed will coordinate the writing of Industry's final review comments for Phil Stolarski, State Materials and Pavement Engineer.*
- **December 22 – Phil Stolarski receives written comments**



Review Procedures

- **January 9, 2007 – Industry representatives will be given an opportunity to present final proposals (in writing) to the Caltrans Pavement Program Steering Committee (PPSC) at the Translab Auditorium.**



Review Procedures

- Caltrans will:
 - *Review Industry comments and proposals.*
 - *Revise specifications as required.*
 - *Distribute the final specification with a summary of comments and responses.*
- Section 39 complete by mid-January.



Background

- **Section 39 substantially unchanged since 1978.**
- **Design, materials qualities, production, placement and evaluation have evolved –**

AASHTO 20xx design procedure, SHRP, automated plants, weights & measures, paver and roller improvements, density testing, etc.



Background

- **36 standard special provisions (SSPs) exist to keep up.**
- **Caltrans adopted the Quality Control/Quality Assurance (QC/QA) process in 1996.**



Background

- In 2005, Caltrans and Industry began revising Section 39.
 - *Joint Caltrans and Industry Committee formed to develop concepts*
 - *Representatives – Industry, Caltrans and UC Berkeley*
 - *2 meetings*



Concepts Committee

New HMA Specifications

Specification Section	Method		QC/QA Light	QC/QA +
	Parking, Gore and Incidental	Small Volume	Rehabilitation and New	
			Low/Medium Traffic (incl. Thin Blankets)	High Traffic
Materials				
Aggregate and Mix Design	Producer (State Verifies)			
Production				
Producer	Umbrella Certification (Plant QC Plan and CT 109) or Alternate			
State	Oversight and Review and CT 109			
Construction				
Testing & Verification				
Contractor (QC)	?		?	Start Up and QC
State (QA)	Ch. 6 of Const. Man.		?	Verify or Independent
Compaction	Method		QC/QA Modified	QC/QA
Smoothness	Straightedge or Profilograph?		Zero Blanking Band with Must Grind or PI	Zero Blanking Band w/ Incentive/Disincentive
Measurement and Payment	-	-	Pay Factor (% or PWL)	Pay Factor (PWL



Technical Committees

- Concepts presented to the Asphalt Concrete Task Group (ACTG)

- *3 ACTG Technical Committees*

- ✓ Materials

- Mike Cook and Cathrina Barros (Caltrans)*

- Dan Chapman and John Schmidt (Industry)*

- ✓ Production

- Basil Miranda and Monte Hammer (Caltrans)*

- ✓ Construction

- Joe Peterson and Cliff Adams (Caltrans)*

- Jim Copley and Skip Brown (Industry)*



Background

- **Technical Committees**
 - *Many issues discussed and resolved.*
 - *Remaining issues back to ACTG.*
 - *Industry requested Rock Products involvement.*
- **Rock Products (Gene Mallette)**
 - *Facilitated 2 meetings.*
 - *Requested issues and proposals in writing.*



Background

- **May 2006, Industry provided “outstanding 4 issues.”**
- **June 2006, Caltrans Technical Committee, PST, and DMEs prepared technical response.**



Caltrans Activities

- **Developed new Section 39 by incorporating:**
 - *Technical Committee Work*
 - *Special Provisions*
 - ✓ Existing Section 39 SSPs
 - ✓ Rubberized Asphalt Concrete (RAC)
 - ✓ QC/QA
- **Developed other Documents**
 - ✓ New SSPs
 - ✓ Plant Qualification Program
 - ✓ Mix Approval Forms



Language and Writing Style

Not quite “Plain Language.”



Basic Concepts

- **Consistency**
- **Rely on the General Provisions**
- **Reduce the words**



Consistency

- Reduce the variation in:
 - *Organization*
 - *Sentence structure*
 - *Words*



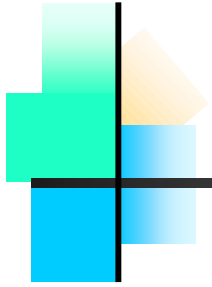
Rely on the General Provisions

- Sections 1-9 of Standard Specifications
 - *“As shown on the plans” Section 5-1.04*
 - *“Rejected work shall be removed . . . “
Section 5-1.09*
 - *“As determined by the Engineer.” Section
5-1.01.*



Reduce the Words

- **Simplify**
 - *Prior to*
 - *Before*
- **Possessive**
 - *The option of the Contractor*
 - *The Contractor's option.*
- **Standard phrases**
 - *Pay clauses*
 - *References*



Questions?



Section 39 Outline

- **39-1 General**
- **39-2 Standard Hot Mix Asphalt**
- **39-3 Method Hot Mix Asphalt**
- **39-4 Quality Control/Quality Assurance**
- **39-5 Measurement and Payment**



Section 39 Outline

- 39-1 General

- *Description*
- *Materials*
- *HMA Mix Design Requirements*
- *Contractor Quality Control*
- *Engineer's Acceptance*
- *Production*
- *Subgrade, Tack Coat and Geosynthetic Pavement Interlayer*
- *Spreading and Compacting Equipment*
- *Transporting, Spreading and Compacting*
- *Miscellaneous Areas*
- *Shoulder Rumble Strip*



Old SSPs

- 36 old SSPs
- Most SSPs incorporated into the new Section 39
- Old SSPs available on-line at:
http://www.dot.ca.gov/hq/esc/oe/specifications/SSPs/99_04-SSPs/Sec_10/22-42/



New SSPs

- Fewer new SSPs with fewer words.
- Not all SSPs will be included in Section 39
 - *Desert (Type C)*
 - *Large Stone Mix*
 - *High Stability Mix*



Plant Qualification Program

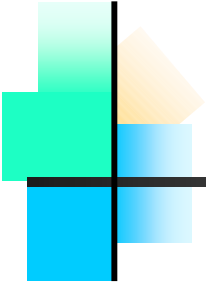
- **Removed production language from specifications.**
- **Asphalt rubber binder equipment included.**
- **Companion to CT 109.**



New Lab Procedures

- **LP-10 for Crumb Rubber Modifier (CRM) sampling and testing.**
- **LP-11 for viscosity of asphalt rubber binder (ARB).**
- **All LPs available on-line at:**

<http://www.dot.ca.gov/hq/esc/Translab/fpmlab.htm>



Highlights - Terminology

OLD	NEW
Asphalt Concrete (AC)	Hot Mix Asphalt (HMA)
Open Graded Asphalt Concrete (OGAC)	Open Graded Friction Course (OGFC)
Rubberized Asphalt Concrete (RAC)	Rubberized Hot Mix Asphalt (RHMA)
Paint Binder	Tack Coat
Asphalt Cement	Asphalt Binder
Supplemental Fine Aggregate	Mineral Filler
-	Job Mix Formula (JMF)



Highlights - Processes

- **HMA Construction Processes**
 - *Standard*
 - *Method*
 - *QC/QA*
- **SSP designates process**



Highlights - HMA Types

- **Types of HMA**
 - ***Type A and B***
(Eliminated asphalt base)
 - ***RHMA-G***
 - ***OGFC***
 - ✓ OGFC
 - ✓ RHMA-O
 - ✓ RHMA-O-HB
- **SSP designates type of HMA**



Highlights - Materials

- **Asphalt Binders**
 - *PG*
 - *Asphalt Rubber Binder*
- **SSP designates type of binder.**



Highlights - Materials

- **Aggregate**
 - *Added 2-fractured faces*
 - *Added FAA*
 - *Added Flat and Elongated*



Highlights - Materials

- **Aggregate Gradation**
 - *Added 1-inch OGFC.*
 - *Added RHMA*
 - *Uses job mix formula (JMF) \pm tolerance*



Highlights - Materials

- **Reclaimed Asphalt Pavement**
 - *Up to 15%*
 - *Contractor's Option*
 - *In all Type A and Type B*
 - *Not for use in RHMA & OGFC*
 - *LP-9 for handling RAP*



Highlights - Materials

- **Hot Mix Asphalt**
 - *Added Voids in Mineral Aggregate (VMA)*
 - *Added Voids Filled with Asphalt (VFA)*
 - *Added Dust Proportion (DP)*



Highlights – Mix Design

- JMF Proposal
 - *By Contractor*
 - *Good for 1-year*
 - *Verified by testing plant mix (except RHMA-G)*
 - *Caltrans may verify aggregate qualities*
- Caltrans will determine asphalt content for OGFC mix designs.




Highlights – Mix Design

- *Forms X, Y and Z*
 - ✓ Form X = Proposed JMF
 - ✓ Form Y = Mix Design Data
 - ✓ Form Z = JMF Verification and
Engineer's Approval
 - ✓ Forms X and Y required for every project.
 - ✓ Form Z required to waive verification.



Highlights – QC

- For standard and QC/QA processes, Contractor QC requirements are contained in tables.
- For Method process, no special QC requirements.
- For Standard process, QC tests for process control only.
- For QC/QA process, aggregate gradation and binder content QC tests used for pay adjustment, if verified.



Highlights – Acceptance

- Acceptance criteria by process.
- For Standard, Method & QC/QA processes, Engineer's Acceptance criteria are contained in tables.
- For Standard & Method processes, Engineer's test used for acceptance.
- For QC/QA process, acceptance based on QC tests for gradation and asphalt content, if verified, and Engineer's cores.



Highlights - Production

- **HMA Plant Qualification Program**
- **Companion to CT 109**



Highlights – Tack Coat

- **Tack coat required between each HMA layer.**
- **Use residual application rates.**
- **Rates determined by Contractor within allowable range.**



Highlights - Spreading & Compacting

- Method HMA
 - *Maximum layer thickness is 3''*
 - *Minimum atmospheric and surface temperatures*
 - *Requires 3 rollers (vibratory, pneumatic and steel)*



Highlights - Spreading & Compacting

- **Standard HMA & QC/QA**
 - *Maximum layer thickness of 3"*
 - *“Method” specified for compaction if HMA layer is less than 0.15-ft*



Highlights - Spreading & Compacting

- Standard HMA & QC/QA
 - *Caltrans will use cores and maximum theoretical density (Rice) for acceptance.*
 - ✓ 92% to 96% of Rice density is required.
 - ✓ Compensation deduct tables included for 90% to 91.9% and 96.1% to 98%.
 - *Caltrans QA results used for density portion of pay factor (on QC/QA projects).*
 - *Contractor's compaction test results used for QC during production.*



Highlights - Spreading & Compacting

- **Placement/Compaction Temperatures:**
 - *Atmospheric and Pavement defined for Method*
 - *Breakdown and finish compaction defined*
 - *2-rollers on OGFC below 65° F*



Highlights - Smoothness

- **Smoothness**

- *Method*

- ✓ 12-foot straightedge and profilograph
“must grind.”

- *Standard and QC/QA*

- ✓ 12-foot straightedge, profilograph
“must grind,” and profilograph with
zero blanking band to determine profile
index.



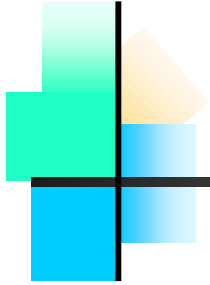
Highlights – QC/QA

- **RHMA-G is included in QC/QA.**
- **Production Start-up Evaluation and Density Test Strip is optional for all processes.**
- **3rd party dispute resolution procedures included.**



Remaining Work

- **Remaining Work includes:**
 - *Polymer Modified Binder (PG-PM)*
 - *Updating the Construction Manual*
 - *Revising California Test Methods:*
 - ✓ CT 304
 - ✓ CT 375



All handouts available on-line at:
<http://www.dot.ca.gov/hq/esc/Translab/fpm.htm>

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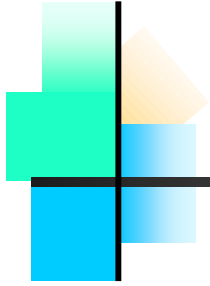
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Reviews

- Provide written comments on:
 - *Section 39*
 - *SSP 39-AAA through 39-LLL*
 - *JMF Forms X, Y & Z*
 - *Production Qualification Program*
 - *Lab Procedures 10 & 11*



For addition information...

Caltrans Contact:

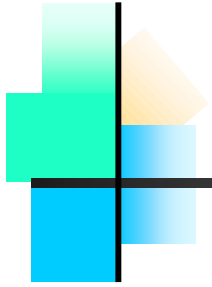
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Questions?